

of the superconducting signal of a lead sample with similar dimensions.

18. A composition of matter comprising a Y-Ba-Cu-O complex of nominal formula $(Y_{1-x}Ba_x)_aCu_bO_y$, wherein "x" is 0.4, "a" is 2, "b" is 1, and "y" is about 2 to about 4, containing a superconductive crystalline phase consisting essentially of Y, Ba, Cu and O which has zero electrical resistance at 77°K or above, said superconductive crystalline phase having a crystal structure uncharacteristic of that of a K_2NiF_4 crystal structure, and said superconductive crystalline phase being present in said composition of matter in a quantity sufficient to provide the composition with a diamagnetic signal at 4.2°K corresponding to about 24% of the superconducting signal of a lead sample with similar dimensions.

19. A composition of matter comprising a Y-Ba-Cu-O complex containing a superconductive crystalline phase consisting essentially of Y, Ba, Cu and O which has zero electrical resistance at 77°K or above, said superconductive crystalline phase having a crystal structure uncharacteristic of that of a K_2NiF_4 crystal structure, and said superconductive crystalline phase being present in said composition of matter in a quantity sufficient to provide the composition with a diamagnetic signal at 4.2°K corresponding to at least 24% of the superconducting signal of a lead sample with similar dimensions.

20. A method for conducting an electrical current without electrical resistive losses, comprising the steps of:

utilizing as a conductor a composition of matter comprising a Y-Ba-Cu-O complex of nominal formula $(Y_{1-x}Ba_x)_aCu_bO_y$, wherein "x" is about 0.01 to 0.5, "a" is about 1 to 2, "b" is 1, and "y" is about 2 to about 4, containing a superconductive crystalline phase consisting essentially of Y, Ba, Cu and O which has zero electrical resistance at 77°K or above, said superconductive crystalline phase having a crystal structure uncharacteristic of that of a K_2NiF_4 crystal structure, and said superconductive crystalline phase being present in said composition of matter in a quantity sufficient to provide the composition with a diamagnetic signal at 4.2°K corresponding to at least 24% of the superconducting signal of a lead sample with similar dimensions;

cooling said composition of matter to a temperature at or below that at which said crystalline phase becomes superconductive; and

initiating a flow of electrical current within said composition of matter while maintaining said composition of matter at or below the temperature at which said crystalline phase becomes superconductive.

21. A method for conducting an electrical current without electrical resistive losses, comprising the steps of:

utilizing as a conductor a composition of matter comprising a Y-Ba-Cu-O complex of nominal formula

$(Y_{1-x}Ba_x)_aCu_bO_y$, wherein "x" is 0.4, "a" is 2, "b" is 1, and "y" is about 2 to about 4, containing a superconductive crystalline phase consisting essentially of Y, Ba, Cu and O which has zero electrical resistance at 77°K or above, said superconductive crystalline phase having a crystal structure uncharacteristic of that of a K_2NiF_4 crystal structure, and said superconductive crystalline phase being present in said composition of matter in a quantity sufficient to provide the composition with a diamagnetic signal at 4.2°K corresponding to about 24% of the superconducting signal of a lead sample with similar dimensions;

cooling said composition of matter to a temperature at or below that at which said crystalline phase becomes superconductive; and

initiating a flow of electrical current within said composition of matter while maintaining said composition of matter at or below the temperature at which said crystalline phase becomes superconductive.

REMARKS

The File Wrapper Continuing Application (FWC) request form instructs that the Specification of this FWC application be amended to include identifying this application as being a Continuation of co-pending application Serial No. 12,205 filed on February 6, 1987. By a Preliminary Amendment Under 37 C.F.R. § 1.115 filed on or about July 15, 1987 in Serial No. 12,205 the Specification of the parent application was amended to recite a Statement of Government Support and to add the